IN THE CLAIMS:

Please amend the claims as follows, substituting any amended claim(s) for the corresponding pending claim(s):

1. (Currently Amended) A data processor comprising:

C execution clusters, each of said C execution clusters comprising an instruction execution pipeline having N processing stages capable of executing instruction bundles comprising from one to S syllables, wherein each of said instruction execution pipelines is L lanes wide, each of said L lanes capable of receiving one of said one to S syllables of said instruction bundles;

an instruction cache capable of storing a plurality of cache lines, each of said cache lines comprising C*L syllables;

an instruction issue unit capable of receiving fetched ones of said plurality of cache lines and issuing complete instruction bundles toward said C execution clusters; and

alignment and dispersal circuitry capable of receiving said complete instruction bundles from said instruction issue unit and routing each of said received complete instruction bundles to a correct one of said C execution clusters as a function of at least one address bit associated with each of said complete instruction bundles.

2. (Currently Amended) The data processor as set forth in Claim 1 wherein said alignment and dispersal circuitry ~~routs~~ routes each of said received complete instruction bundles to said correct execution cluster as a function of at least one address bit associated with at least one syllable in each of said ~~each~~ complete instruction ~~bundle~~ bundles.

3. (Currently Amended) The data processor as set forth in Claim 1 wherein said alignment and dispersal circuitry routes each of said received complete instruction bundles to said correct execution cluster as a function of a cluster bit associated with each of said complete instruction ~~bundle~~ bundles.

4. (Currently Amended) The data processor as set forth in Claim 1 wherein said alignment and dispersal circuitry ~~routs~~ routes each of said received complete instruction bundles to said correct execution cluster as a function of a stop bit associated with at least one syllable in each of said ~~each~~ complete instruction ~~bundle~~ bundles.

5. (Currently Amended) The data processor as set forth in Claim 1 wherein said alignment and dispersal circuitry comprises multiplexer circuitry capable of routing each of said ~~each~~ received complete instruction ~~bundle~~ bundles to any one of said C execution clusters.

6. (Original) The data processor as set forth in Claim 5 wherein said alignment and dispersal circuitry comprises control logic circuitry capable of controlling said multiplexer circuitry.

7. (Currently Amended) The data processor as set forth in Claim 6 wherein said control logic circuitry controls said multiplexer circuitry as a function of at least one of:

1) said at least one address bit associated with each of said ~~each~~ complete instruction ~~bundle~~ bundles;

2) at least one address bit associated with at least one syllable in each of said ~~each~~ complete instruction ~~bundle~~ bundles; and

3) a cluster bit associated with each of said ~~each~~ complete instruction ~~bundle~~ bundles.

8. (Original) The data processor as set forth in Claim 1 wherein L=4.

9. (Original) The data processor as set forth in Claim 1 wherein C=3.

10. (Currently Amended) A processing system comprising:

a data processor;

a memory coupled to said data processor;

a plurality of memory-mapped peripheral circuits coupled to said data processor for performing selected functions in association with said data processor, wherein said data processor comprises:

C execution clusters, each of said C execution clusters comprising an instruction execution pipeline having N processing stages capable of executing instruction bundles comprising from one to S syllables, wherein each of said instruction execution pipelines is L lanes wide, each of said L lanes capable of receiving one of said one to S syllables of said instruction bundles;

an instruction cache capable of storing a plurality of cache lines, each of said cache lines comprising C*L syllables;

an instruction issue unit capable of receiving fetched ones of said plurality of cache lines and issuing complete instruction bundles toward said C execution clusters; and

alignment and dispersal circuitry capable of receiving said complete instruction bundles from said instruction issue unit and routing each of said received complete instruction bundles to a correct one of said C execution clusters as a function of at least one address bit associated with each of said complete instruction bundles.

11. (Currently Amended) The processing system as set forth in Claim 10 wherein said alignment and dispersal circuitry ~~routs~~ routes each of said received complete instruction bundles to said correct execution cluster as a function of at least one address bit associated with at least one syllable in each of said ~~each~~ complete instruction ~~bundle~~ bundles.

12. (Currently Amended) The processing system as set forth in Claim 10 wherein said alignment and dispersal circuitry ~~routs~~ routes each of said received complete instruction bundles to said correct execution cluster as a function of a cluster bit associated with each of said ~~each~~ complete instruction ~~bundle~~ bundles.

13. (Currently Amended) The processing system as set forth in Claim 10 wherein said alignment and dispersal circuitry ~~routs~~ routes each of said received complete instruction bundles to said correct execution cluster as a function of a stop bit associated with at least one syllable in each of said ~~each~~ complete instruction ~~bundle~~ bundles.

14. (Currently Amended) The processing system as set forth in Claim 10 wherein said alignment and dispersal circuitry comprises multiplexer circuitry capable of routing each of said ~~each~~ received complete instruction ~~bundle~~ bundles to any one of said C execution clusters.

15. (Original) The processing system as set forth in Claim 14 wherein said alignment and dispersal circuitry comprises control logic circuitry capable of controlling said multiplexer circuitry.

16. (Currently Amended) The processing system as set forth in Claim 15 wherein said control logic circuitry controls said multiplexer circuitry as a function of at least one of:

1) said at least one address bit associated with each of said ~~each~~ complete instruction ~~bundle~~ bundles;

2) at least one address bit associated with at least one syllable in each of said ~~each~~ complete instruction ~~bundle~~ bundles; and

3) a cluster bit associated with each of said ~~each~~ complete instruction ~~bundle~~ bundles.

17. (Original) The processing system as set forth in Claim 10 wherein L=4.

18. (Original) The processing system as set forth in Claim 10 wherein C=3.

19. (Currently Amended) For use in a data processor comprising C execution clusters, each of the C execution clusters comprising an instruction execution pipeline having N processing stages capable of executing instruction bundles comprising from one to S syllables, wherein each of the instruction execution pipelines is L lanes wide, each of the L lanes capable of receiving one of the one to S syllables of the instruction bundles, a method of routing instruction bundles into the L lanes in the C execution clusters comprising the steps of:

fetching cache lines from an instruction cache, each of the cache lines comprising C*L syllables;

issuing complete ~~ones of the~~ instruction bundles toward the C execution clusters; and

routing each of the received complete instruction bundles to a correct one of the C execution clusters as a function of at least one of:

1) ~~the~~ at least one address bit associated with each of the ~~each~~ complete instruction ~~bundle~~ bundles;

2) at least one address bit associated with at least one syllable in each of the ~~each~~ complete instruction ~~bundle~~ bundles; and

3) a cluster bit associated with each of the ~~each~~ complete instruction ~~bundle~~ bundles.

20. (Original) The method as set forth in Claim 19 wherein L=4 and C.

21. (New) The data processor as set forth in Claim 1, wherein said alignment and dispersal circuitry is further capable of aligning said syllables with correct ones of said lanes.

22. (New) The processing system as set forth in Claim 10, wherein said alignment and dispersal circuitry is further capable of aligning said syllables with correct ones of said lanes.